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(54) BROADCAST RECEIVER

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a broadcast receiver that detects a broadcast start time in the unit of musical piece so as to attain reservation processing in the unit of musical piece.

SOLUTION: The broadcast receiver of this invention has a reception means that receives broadcast program attached information, a storage means that stores the received program attached information, a detection means that detects temporal periodicity of the program attached information, and a program list generating means that generates an electronic program guide on the basis of the temporal periodicity of the program attached information. Since the electronic program guide can easily be generated even from less information at a transmitter side as the program attached information of a repetitive broadcast by generating the electronic program guide from the program attached information, the broadcast start time, e.g. in the unit of musical piece and the reservation processing in the unit of musical piece can be attained.

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CLAIMS

[Claim(s)]

[Claim 1] The broadcast receiver characterized by having a receiving means to receive the program additional information broadcast, a storage means to memorize said received program additional information, a detection means to detect the time periodicity of said program additional information, and a race card creation means to create an electronic program guide based on the time periodicity of said program additional information.

[Claim 2] The broadcast receiver characterized by to have a receiving means to receive the program additional information broadcast, a means memorize said received program additional information for every program element which constitutes a program, a detection means detect the time periodicity for every program element of said program additional information, and a race card creation means create the electronic program guide for every program element based on the time periodicity for every program element of said program additional information.

[Claim 3] The broadcast receiver characterized by having a receiving means to receive the additional information (henceforth SAUNDONABI information) of music broadcast, a storage means to memorize said received SAUNDONABI information, a detection means to detect the time periodicity of said SAUNDONABI information, and a race card creation means to create an electronic program guide based on the time periodicity of said SAUNDONABI information.

[Claim 4] The broadcast receiver characterized by having a receiving means to receive the SAUNDONABI information on music broadcast, a storage means to memorize said received SAUNDONABI information for every musical piece, a detection means to detect the time periodicity for every musical piece of said SAUNDONABI information, and a race card creation means to create the electronic program guide for every musical piece based on the time periodicity for every musical piece of said SAUNDONABI information.

[Claim 5] The broadcast receiver according to claim 1 characterized by having further a shortest time amount detection means to detect the shortest time amount in which the program reserved as a reservation means to reserve a program from said electronic program guide carries out broadcast initiation next, and a reservation activation means to perform reservation processing at the broadcast start time of the detected reservation program.

[Claim 6] The broadcast receiver according to claim 4 characterized by having further a reservation activation means to perform reservation processing at the same start time of the next day reserved as a reservation means to reserve the appointed musical piece from said electronic program guide.

[Claim 7] Said reservation activation means is a broadcast receiver according to claim 5 or 6 characterized by stopping reservation activation when the electronic program guide at the time of reservation is compared with the electronic program guide in front of reservation activation and an inequality is detected.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] Especially this invention relates to a suitable broadcast receiver to perform reservation processing of the musical piece unit in music broadcast of digital broadcast about a broadcast receiver.

[0002]

[Description of the Prior Art] Drawing 5 is drawing showing the basic configuration of a digital broadcast receiver. If the decoding procedure of the digital broadcast receiver 500 is explained, from an antenna 501, broadcast will be received through the antenna terminal 519, and it will tune up with the tuner 502 of a digital broadcast receiver, and will be changed into a transport stream in a QPSK demodulator and the error correction processing section (the following, FEC, and brief sketch) 503.

[0003] The changed transport stream is divided into voice data, image data, and program information (SI:Service Information) data by transport 504. It gets over to

digital voice data by the MPEG voice recovery section 505, and the separated voice data is sent to the TV monitor 517 by voice D/A (DA converter)507 as an analog voice output, and is outputted.

[0004] Digital voice data is simultaneously modulated by optical voice by the optical voice output 506, it is sent to the optical sound recorder system of MD recorder 516 grade, and voice data is recorded. The separated image data turn into digital image data by the MPEG image recovery section 508, and are sent to the video encoder 511.

[0005] SAUNDONABI information is extracted from the separated program information (SI) data by the SAUNDONABI information recovery section 510, and it is stored in memory 509. Guide information is created based on the SAUNDONABI information stored in memory 509, the OSD (On Screen Display:TV screen display) display process 513 is performed, and required screen data are created.

[0006] The screen data made here and the image data created in the MPEG image recovery section 508 are mixed, and it is sent to the TV monitor 517 as an analog video output by the video encoder 511, and is outputted.

[0007] If remote control or a control panel 520 performs reservation actuation, the content of actuation is decoded by the control code recovery section 521, and when performing for example, program reservation here, a user will perform reservation processing based on guide information while he performs OSD display processing 513.

[0008] If the reserved information is stored in memory 509 and becomes reservation time amount, by the reservation executive operation section 512, it will control a tuner 502 and transport 504 and will perform channel selection processing of Assignment CH.

[0009] At the time of reservation activation, an image transcription control signal is transmitted to a videocassette recorder 518 by the video mouse output section 514, and the video image transcription of the tuned-in program is carried out. Moreover, if the control signal for MD is similarly transmitted using the video mouse output section 514, reservation processing can be interlocked with and the MD recorder 516 can also be operated.

[0010] Usually, the function to detect the existence of optical voice data is carried in the MD recorder 516 side, it is controlling to take out an optical voice output with the optical voice output 506 side by the reservation executive operation section 512 only during reservation activation, and the MD recorder 516 is interlocked with reservation processing.

[0011] Moreover, CPU515 is controlling each block. Drawing 3 is drawing showing the reservation processing flow of the conventional music broadcast. The display demand of the program guide for reserving a program first is performed by the user (step S300).

[0012] If there is a display demand of a program guide, a program guide screen will be created and displayed based on the event information on the program sent by broadcast (event information: information, such as program broadcast start time,

broadcasting—hours length of a program, and a program title, is included) (step S301).

[0013] The event information on a music program will be one event (that is, it will have 1 program composition in one day) on the 1st. the inside of it -- about 2 time periods -- repeating -- a sound -- easy broadcast is performed. it is -- a sake (caution: 1999 year 6 it is not guaranteed only by broadcasting such a specification with the music radio CH of the moon current digital satellite broadcasting service SKY Perfec TV.) Reservation of a music program will turn into reservation of a unit on the 1st.

[0014] Since the program reservation by the time amount from a program guide turns into reservation of an event unit as mentioned above for the information on an event unit, a music program is reserved per event (day unit) (step S302).

[0015] When the broadcast start time of the reserved music program comes, reservation processing is performed, the reserved program tunes in (step S303), video and MD recorder are automated still more nearly simultaneous, and record of music broadcast is started (step S304).

[0016] And when it becomes the broadcast end time of the reserved music program, reservation processing will be ended (step S305) and record into video or MD recorder is stopped simultaneously (step S306). Reservation processing is completed above (step S307).

[0017] Thus, since the program guide was created based on event information in the former, only reservation of an event unit was completed but program reservation on the 1st had to be fulfilled the whole **** in the program of one event like music broadcast on the 1st.

[0018] Drawing 4 is drawing showing the example of utilization of the conventional SAUNDONABI information. The musical piece title name 400 corresponding to the music currently broadcast, the musical piece player name 401, the musical piece performance time amount (performance total time amount) 402, and the musical piece performance elapsed time 403 are included in SAUNDONABI information.

[0019] Using this information, the information on the musical piece under present reception is displayed, as shown in drawing 4 . The information on a musical piece currently heard by displaying the musical piece title name 400 under present broadcast, the musical piece player name 401 under present broadcast, the musical piece performance time amount 402 under present broadcast, and the musical piece performance elapsed time 403 that shows how much time amount has passed after the musical piece under present broadcast carried out performance initiation can check now on real time.

[0020] Although the present SAUNDONABI information was transmitted to 2 – 3 seconds spacing like once (caution: especially this spacing is not guaranteed.), the performance start time of a musical piece was not contained, and since the SAUNDONABI information corresponding to that musical piece was sent only just before the performance of a musical piece starts further, it was not able to use for

this SAUNDONABI information as reservation information on a musical piece unit.

[0021]

[Problem(s) to be Solved by the Invention] As mentioned above, the broadcast start time information on a corresponding musical piece was not included, and since the SAUNDONABI information corresponding to the musical piece was sent only just before the performance of a musical piece starts further, it was not able to use for the SAUNDONABI information sent in music broadcast as reservation information on a musical piece unit.

[0022] For this reason, in the former, the sent SAUNDONABI information was displayed as it was, it considered as the musical piece information under present broadcast, and recording SAUNDONABI information as list information and only making it display as hysteresis information was used.

[0023] Using broadcasting repeatedly that this invention is SAUNDONABI information the fixed period with music broadcast, the broadcast start time of a musical piece unit is detected, and it aims at enabling reservation processing of a musical piece unit.

[0024]

[Means for Solving the Problem] The broadcast receiver of this invention is equipped with a receiving means to receive the program additional information broadcast, a storage means to memorize said received program additional information, a detection means to detect the time periodicity of said program additional information, and a race card creation means to create an electronic program guide based on the time periodicity of said program additional information.

[0025] Moreover, the broadcast receiver of this invention is equipped with a receiving means to receive the program additional information broadcast, a means to memorize said received program additional information for every program element which constitutes a program, a detection means to detect the time periodicity for every program element of said program additional information, and a race card creation means to create the electronic program guide for every program element based on the time periodicity for every program element of said program additional information. Thereby, the electronic program guide for every program element can be easily created from little information by the side of delivery using the repeat of program additional information.

[0026] Furthermore, the broadcast receiver of this invention is equipped with a receiving means to receive the SAUNDONABI information on music broadcast, a storage means to memorize said received SAUNDONABI information, a detection means to detect the time periodicity of said SAUNDONABI information, and a race card creation means to create an electronic program guide based on the time periodicity of said SAUNDONABI information. Thereby, an electronic program guide can be easily created using the repeat of information to little SAUNDONABI information by the side of delivery.

[0027] Moreover, the broadcast receiver of this invention is equipped with a receiving

means to receive the SAUNDONABI information on music broadcast, a storage means to memorize said received SAUNDONABI information for every musical piece, a detection means to detect the time periodicity for every musical piece of said SAUNDONABI information, and a race card creation means to create the electronic program guide for every musical piece based on the time periodicity for every musical piece of said SAUNDONABI information. Thereby, the electronic program guide for every musical piece can be easily created using the repeat of information to little SAUNDONABI information by the side of delivery.

[0028] Moreover, the program reserved as a reservation means reserve a program from said electronic program guide can reserve every program element from little information by the side of delivery using the repeat of program additional information by having further a shortest time amount detection means detect the shortest time amount which carries out broadcast initiation next, and a reservation activation means perform reservation processing at the broadcast start time of the detected reservation program.

[0029] A reservation activation means to perform reservation processing at the same start time of the next day reserved as a reservation means to reserve the appointed musical piece from said electronic program guide, by moreover, the thing which it has further For example, using music broadcast broadcasting repeatedly also in the Japanese unit like the present digital broadcast, about a musical piece, the start time broadcast on the next day can be deduced, reservation of a musical piece unit is enabled, and record to record media, such as video and MD, can be performed per musical piece.

[0030] Moreover, said reservation activation means compares the electronic program guide at the time of reservation with the electronic program guide in front of reservation activation, and by stopping reservation activation, when an inequality is detected, even when the switch stage and the reservation execution time of the content of repeat broadcast lap, it can avoid unnecessary reservation activation.

[0031]

[Embodiment of the Invention] Hereafter, the gestalt of suitable operation of this invention is explained to a detail, referring to an accompanying drawing. Drawing 1 is drawing showing the reservation processing flow of the musical piece unit by the gestalt of the 1st operation of this invention.

[0032] In order to reserve a musical piece unit, the broadcast start time of a musical piece unit must be detected using SAUNDONABI information, and the following procedure performs. (Here, the program which is broadcasting the musical piece which wants to reserve as a premise must be received until the broadcast start time of a musical piece unit is detected.)

[0033] First, SAUNDONABI information is acquired when the SAUNDONABI information sent by broadcast changes (at the event of music changing) (step S100). The time of day in this event is simultaneously acquired as broadcast start time of a

musical piece.

[0034] And it searches (step S101), and if it is not recorded whether there are a content currently recorded on sound NABIRISUTO information and a match, it carries out additional record at list information (step S102).

[0035] As information recorded at this time, it is four, A: musical piece title name information, B: musical piece player name information, C: musical piece performance hour entry, and D: musical piece performance start time information, and it is important that the musical piece performance start time information which is not included in the SAUNDONABI information sent by broadcast is added here.

[0036] Since new SAUNDONABI information always, additional record will be carried out at the time at which reception was just begun at sound NABIRISUTO information, and it will repeat the flow of step S103 which waits for the following SAUNDONABI information again. And when SAUNDONABI information [finishing / acquisition / already] is sent by repetition broadcast and it comes, musical piece performance start time then detected is made into the E: newest musical piece performance start time information, and the periodic hour entry of F: repetition broadcast is computed and recorded by taking the difference of musical piece performance start time: D in front of 1 period already recorded, and the newest musical piece performance start time: E (step S104).

[0037] Next, the musical piece information which does not correspond to repetition broadcast is deleted by the musical piece registered into sound NABIRISUTO information (step S105). What is necessary is for the musical piece information on a number younger than the already registered list number to judge with not corresponding to broadcast repeatedly, and just to delete it, when it is detected that it was in agreement with the musical piece into which the received SAUNDONABI information was already registered as an approach. Simultaneously, the sound NABIRISUTO information for one period is shifted so that it may become the list number 1 about the musical piece of the head of repetition broadcast, and it records as list information on the musical piece information for one period currently sent by repeat broadcast (step S106). It means that information required for reservation of the musical piece for one period was acquired by the above processing.

[0038] Next, when the program guide of a musical piece unit is demanded by the user (step S107), the broadcast start time of each musical piece is computed from the sound NABIRISUTO information currently recorded (step S108).

[0039] As an approach, the broadcast start time of the musical piece of the n-th list $(\text{Period time amount of F: repetition broadcast}) * m + (C1: \text{performance time amount of 1st list}) + (C2: \text{performance time amount of 2nd list}) + \dots + (Cn: \text{performance time amount of the n-th list})$ When you make m into 0, 1, and 2 --, let the minimum time of day when the broadcast start time computed exceeds current time be the broadcast start time of a musical piece unit.

[0040] The program guide of a musical piece unit is displayed and a musical piece unit

is made to reserve based on the broadcast start time of the musical piece unit computed here (step S109). After that, the usual reservation executive operation (303–307 of drawing 3) is performed (step S110), and reservation processing is completed (step S111).

[0041] Drawing 2 is drawing showing the reservation processing flow of the musical piece unit by the gestalt of the 2nd operation. In order to reserve a musical piece unit like the gestalt of the 1st operation using music broadcast of the present digital broadcast broadcasting repeatedly also in the Japanese unit, the gestalt of this operation must detect the broadcast start time of a musical piece unit, and performs it in the following procedure.

[0042] First, SAUNDONABI information is acquired when the SAUNDONABI information sent by broadcast changes (step S200). The time of day in this event is simultaneously acquired as broadcast start time of a musical piece. And additional record is carried out, using SAUNDONABI information for the fixed number of cases (for example, 30 affairs) as list information. If it exceeds 30 affairs at this time, overwrite record is again carried out from the head of list information (step S201).

[0043] As information recorded at this time, it is four, A: musical piece title name information, B: musical piece player name information, C: musical piece performance hour entry, and D: musical piece performance start time information, and it is important that the musical piece performance start time information which is not included in the SAUNDONABI information sent by broadcast is added here. This processing is repeated and the newest sound NABIRISUTO information for the fixed number of cases is always recorded (step S202).

[0044] Next, when the program guide of a musical piece unit is demanded by the user (step S203), the broadcast start time of each musical piece is computed from the sound NABIRISUTO information currently recorded (step S204). As an approach, the time information on the performance start time of a musical piece is extracted, and it considers as the broadcast start time of the musical piece unit of the next day.

[0045] The program guide of a musical piece unit is displayed and a musical piece unit is made to reserve based on the broadcast start time of the musical piece unit computed here (step S205). After that, the usual reservation executive operation (step S303 of drawing 3 – step S307) is performed (step S206), and reservation processing is completed (step S207).

[0046] In addition, this invention is not limited to the gestalt of the above-mentioned implementation. By comparing the electronic program guide at the time of reservation with the electronic program guide in front of reservation activation, even when the change stage and the reservation execution time of the content of repetition broadcast lap, unnecessary reservation activation can be avoided.

[0047]

[Effect of the Invention] According to this invention, an electronic program guide can be easily created in a detail even from little information by the side of delivery as

program additional information using broadcasting repeatedly by fixed time amount which has music broadcast like the present digital broadcast.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is drawing showing the reservation processing flow of the musical piece unit by the gestalt of the 1st operation of this invention.

[Drawing 2] It is drawing showing the reservation processing flow of the musical piece unit by the gestalt of the 2nd operation.

[Drawing 3] It is drawing showing the reservation processing flow of the conventional music broadcast.

[Drawing 4] It is drawing showing the example of utilization of the conventional SAUNDONABI information.

[Drawing 5] It is drawing showing the basic configuration of a digital broadcast receiver.

[Description of Notations]

400 Musical Piece Title Name

401 Musical Piece Player Name

402 Musical Piece Performance Time Amount

403 Musical Piece Performance Elapsed Time

501 Antenna

502 Tuner

503 QPSK Recovery &FEC

504 Transport

505 MPEG Voice Recovery

506 Optical Voice Output

507 Voice D/A

508 MPEG Image Recovery

509 Memory

510 SAUNDONABI Information Recovery

512 Reservation Executive Operation

513 OSD Display Processing

514 Video Mouse Output
